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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,503	03/15/2004	Guido Gabriele Albasini	2110-111-03	1822

7590 04/20/2007

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EXAMINER	
FILE, ERIN M	
ART UNIT	PAPER NUMBER
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/801,503	ALBASINI ET AL.	
	Examiner	Art Unit	
	Erin M. File	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/15/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the two outputs for the control logic in claim 11 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show proper labels for the input signals in figure 14 as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 10-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Knierim et al. (U.S. Pub. No. 2004/0145420).

Claim 1, 10, Knierim discloses:

- means for generating a modulation value (fig. 2, 280, [0023])
- means for generating a feedback signal dividing the frequency of the output signal by a dividing ratio (fig. 2, 275, [0020]), the dividing ratio being modulated according to the modulation value for providing the conversion factor on the average (fig. 2, see dividing ratio, as described in [0023] as an averaged ratio)
- means for generating a control signal indicative of a phase difference between the reference signal and the feedback signal (fig. 2, 210, [0019]),
- means for controlling the frequency of the output signal according to the control signal (fig. 2, 210, [0019]), and means for compensating a phase error caused by the modulation of the dividing ratio ([0020], line 17-[0021], line 6, output of signal delta modulator 280 is input to pre-scaler 275 and then to phase comparator 210 to determine error signal)

- means for compensating includes means for calculating an incremental value, indicative of an incremental phase error ([0021], lines 16-18, discloses phase error of small values or increments), according to the conversion factor and the modulation value ([0021], lines 1-5)
- means for calculating a correction value accumulating the incremental value (fig. 2, 250, [0021], lines 3-5) and means for conditioning the control signal according to the correction value (error signal conditions control signal [0019]).

Claim 2, Knierim further discloses the means for generating the modulation value includes a sigma-delta modulator having an order at least equal to two (fig. 2, 280).

Claims 11, 19, Knierim discloses:

- a control circuit operable to receive a first data set (fig. 2, input to 210), the control circuit further operable to produce a phase-error value from the first data set, the control circuit further operable to produce a second data set from the phase-error value (fig. 2, 210);
- a generator coupled to the control circuit, the generator operable to generate a compensation signal corresponding to the second data set ([0020], lines 4-9, the phase error value is filtered by loop filter 220 and used to adjust the output frequency of the VCO).

Claims 12, 20, Knierim further discloses the first data set comprises a modulation value operable to modulate a phase-locked-loop frequency divider (fig. 2, 250 outputs modulation value to PLL element 275 which performs frequency division, [0020]).

Claim 13, Knierim further discloses the control circuit comprises a first modifier operable to convert the first data set into a third data set (fig 2, 275, receives data creates a third data set of feedback data).

Claims 14, 21, Knierim further discloses the control circuit further comprises a second modifier coupled to the first modifier, the second modifier operable to convert the third data set into the phase-error value (see fig. 2, 210, phase error data is determined using feedback data of third data set).

Claim 15, the control circuit further comprises a third modifier coupled to the second modifier, the third modifier operable to convert the phase-error value into the second data set ([0020], lines 4-9, the phase error value is filtered by loop filter 220).

Claim 16, Knierim further discloses the generator comprises a first modifier operable to convert the second data set into a third data set (see fig. 2, 210, phase error data is determined using feedback data of third data set).

Claim 17, Knierim further discloses the generator further comprises a second modifier coupled to the first modifier, the second modifier operable to convert the third data set into a fourth data set (fig 2, 275, receives data creates a fourth data set of feedback data).

Claim 18, Knierim further discloses the generator further comprises a third modifier coupled to the second modifier, the third modifier operable to convert the fourth data set into the compensation signal ([0020], lines 4-9, the phase error value is filtered by loop filter 220 and used to adjust the output frequency of the VCO).

Claim 22, converting the second data set into a third data set; converting the third data

set into a fourth data set; and converting the fourth data set into the compensation signal ([0020], lines 4-9, the phase error value is filtered by loop filter 220 and used to adjust the output frequency of the VCO).

Claim 23, Knierim discloses a phase-locked loop, comprising:

- a circuit operable to introduce a phase error between first and second signals (fig. 2, 280, introduces error between two signals);
- a control circuit operable to receive a first data set (fig. 2, input to 210), the control circuit further operable to produce a phase-error value from the first data set (fig. 2, 210, [0019], lines 4-6), the control circuit further operable to produce a second data set from the phase-error value (fig. 2, 220 loop filter produce data from phase error signal);
- a generator coupled to the control circuit, the generator operable to generate a compensation signal corresponding to the second data set ([0020], lines 4-9, the phase error value is filtered by loop filter 220 and used to adjust the output frequency of the VCO).

Claim 24, Knierim discloses:

- a control circuit operable to receive a first data set (fig. 2, input to 210), the control circuit further operable to produce a phase-error value from the first data set (fig. 2, 210, [0019], lines 4-6), the control circuit further operable to produce a second data set from the phase-error value(fig. 2, 220 loop filter produce data from phase error signal);

- a generator coupled to the control circuit, the generator operable to generate a compensation signal corresponding to the second data set ([0020], lines 4-9, the phase error value is filtered by loop filter 220 and used to adjust the output frequency of the VCO).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Knierim et al. (U.S. Pub. No. 2004/0145420) as applied to claim 1 above, and further in view of Melanson et al. (U.S. Pub. No. 2003/0151535).

Claim 3, Knierim fails to disclose the means for generating the modulation value includes a multi-bit modulator, however, Melanson discloses modulation value includes a multi-bit modulator ([0007], lines 4-6). Melanson further discloses a higher modulation index can be used, providing the advantage of the output signals can be of a greater level ([0007], lines 1-3).

7. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knierim et al. (U.S. Pub. No. 2004/0145420) as applied to claim 1 above, and further in

view of Kim et al. (U.S. Pub. No. 2005/0185491).

Claim 5, Knierim fails to disclose the means for conditioning includes means for converting a representation of the correction value into a thermometric code consisting of a plurality of thermometric digits of even weight, and a plurality of digital-to-analog converters each one for a corresponding thermometric digit, however, Kim discloses converting a representation of the correction value into a thermometric code consisting of a plurality of thermometric digits of even weight, and a plurality of digital-to-analog converters each one for a corresponding thermometric digit, however, Kim discloses means for converting a representation of the correction value into a thermometric code consisting of a plurality of thermometric digits of even weight, and a plurality of digital-to-analog converters each one for a corresponding thermometric digit, however, Kim discloses converting a representation of the correction value into a thermometric code consisting of a plurality of thermometric digits of even weight, and a plurality of digital-to-analog converters each one for a corresponding thermometric digit (fig. 5, [0095]). Because the use of thermometric values in phase locked loop systems is well known in the art for the benefit of reducing thermal induced errors, it would have been obvious to one skilled in the art at the time of invention to incorporate the thermometric code as disclosed by Kim in to the invention of Knierim.

Claim 6, Knierim discloses each thermometric digit consists of a thermometric bit, each digital-to-analog converter being a single-bit converter (fig. 5, 200).

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Claim 1 recites the limitation "on *the* average" in line 6. There is insufficient antecedent basis for this limitation in the claim.

11. Claim 15 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the interconnections of the data sets and data modifiers are written in such a way that the examiner cannot determine how they are configured, the claims are therefore rendered indefinite.

Claim Objections

12. Claim 1 is objected to because of the following informalities:

Claim 1, line 3, after including there should be a semi colon, in line 4, a *by* should be inserted between *signal* and *dividing*.

Claims 11-18, the language referring the the modifiers and data sets do not explicitly agree with the language and terminology used in the specifications and drawings. It is difficult to correlate the modifying elements of these claims with the structural elements

in the drawings, and corrections to these claims which illuminate the intended structure is suggested.

Appropriate correction is required.

Allowable Subject Matter

13. Claim 4, 7-9 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is 5712726040. The examiner can normally be reached on M-F 1-9:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 5712723024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Erin M. File

EMF

4/10/2007

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DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER